MAKING CONCRETE HOLLOW BLOCKS

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INTRODUCTION

Concrete hollow blocks are considered to be one of the most economical, yet long lasting building materials we have today. They are very easy to use, therefore labour costs are minimal. They can be used in the construction of walls in all types of buildings.

Although concrete hollow blocks are usually made by machine, it is easy to make them by hand. To do this, a collapsible or hinged type mould is used. The mould can be made in any metal fabricating workshop.

Projects for the hand manufacture of concrete hollow blocks have been tried out at several high schools with great success. For example, at Malabunga High School, the students made enough blocks to build the walls of their school Assembly Hall.

This article gives a plan of how the mould is made, and instructions for making the concrete hollow blocks.

THE MOULD

The mould is the most important piece of equipment in the manufacture of concrete hollow blocks, whether they are made by hand or by machine.

When making the mould, it should be remembered that two sizes of concrete hollow block are commonly used:

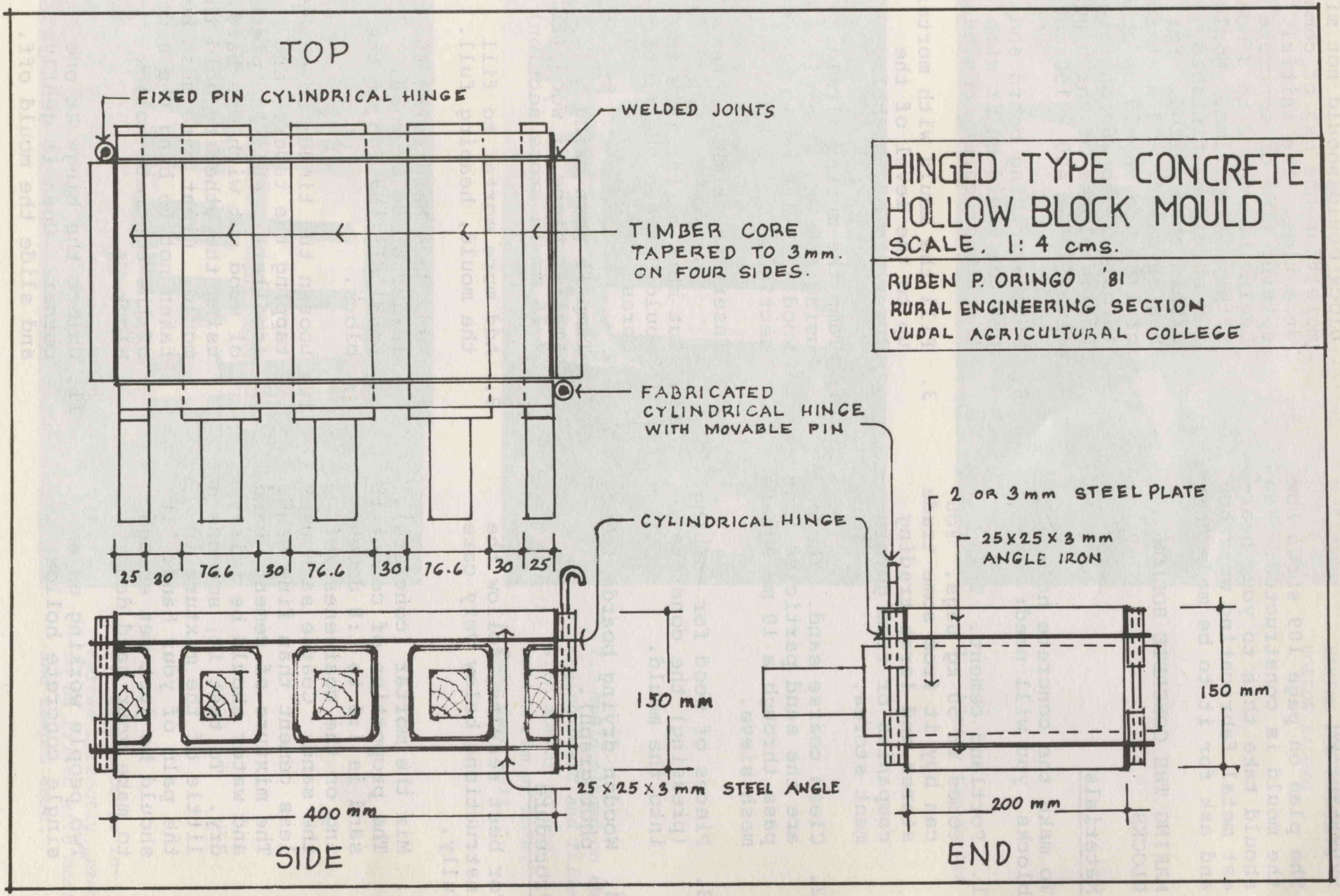
1. 200 x 400 x 150 mm - for load bearing walls, e.g. the outside walls of big buildings.
2. 200 x 400 x 100 mm - for non-bearing walls, such as partition walls or outside walls of one storey buildings less than 2.5 m high.

The measurements given here refer to the larger size mould.

Materials

To make the mould for 200 x 400 x 150 mm hollow blocks, you will need:

1. Mild steel plate 2 or 3 mm thick: 2 pieces 150 x 400 mm for the sides and 2 pieces 150 x 200 mm for the ends.
2. Angle bar 25 x 25 x 3 mm (4 lengths of 200 mm and 4 lengths of 400 mm).
3. Eight cylinders 25 mm long to be fabricated from a 16 mm mild steel round bar.
4. Two pieces of 6 mm round mild steel bar, 150 mm and 250 mm long.
5. Wood to fit the holes of the mould.


TOP
FIXED PIN CYLINDRICAL HINGE
WELDED JOINTS
TIMBER CORE
TAPERED TO 3mm.
ON FOUR SIDES.
FABRICATED
CYLINDRICAL HINGE
WITH MOVABLE PIN
CYLINDRICAL HINGE
2 OR 3mm STEEL PLATE
25X25X3 mm
ANGLE IRON
25 30 76.6 30 76.6 30 76.6 30 25
150 mm
25 X 25 X 3 mm STEEL ANGLE
400 mm
SIDE
150 mm
200 mm
END
HINGED TYPE CONCRETE
HOLLOW BLOCK MOULD
SCALE. 1: 4 cms.
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Construction

The plan on page 109 shows how the mould is constructed. You should take this to your nearest metal fabricating workshop and ask for it to be made there.

MAKING THE CONCRETE HOLLOW BLOCKS

Materials

To make the concrete hollow blocks, you will need:

1. Portland cement. This comes in 50 kg bags. You can buy it from some trade stores and large trading companies or from government stores.

2. Clean coarse sand. These are the sand particles that pass through a 10 mm square mesh sieve.

3. Pieces of wood for tamping (pressing) the concrete into the mould.

4. Wooden drying boards (see photograph).

Procedure

For best results, follow the instructions below very carefully.

1. Mix the mortar (concrete). The proportion of cement to sand is 1:6 to 1:8 depending on the coarseness of the sand. Coarse sand uses less cement than fine sand. The mixture of cement, sand and water should be fairly dry. To test it, squeeze a little of the mixture in the palm of your hand. It should be just wet enough to make your hand damp.

   Two people working on a single concrete hollow block mould should not mix more than one bag of cement at a time. The initial setting time of concrete begins between 2 to 3 hours after mixing time. Moulding should be finished within this period. For a bag of cement and a mixture of 1:6, you should be able to make 25 to 26 concrete hollow blocks of the bigger size (200 x 400 x 150 mm).

2. Wet the drying board and put the mould on it with the timber cores removed.

3. Fill the mould with mortar up to the level of the lower rim of the hole.

4. Tamp the mortar firmly, using the end of a piece of wood 75 x 100 mm in cross section.

5. Insert the timber cores.

6. Put more mortar into the mould between the timber cores.

7. Tamp it down using a smaller piece of wood (25 x 75 mm in cross section)

8. Add more mortar to fill the mould, heaping full.

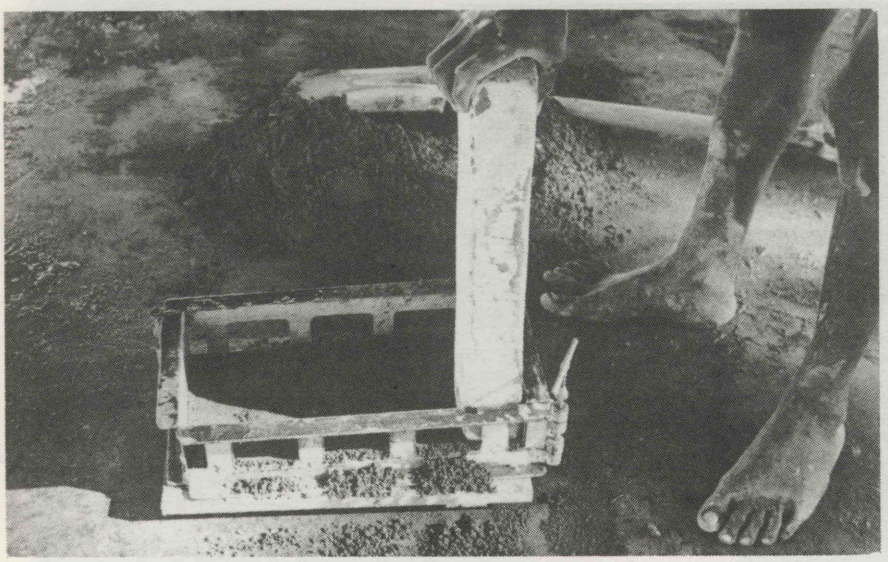
9. Tamp down hard using the larger piece of wood. Level off the top of the block.

10. Loosen the timber cores by tapping the tapered end (smaller). Pull the pieces of wood out with one hand, using the other to hold the mould. Great care must be taken not to bang the sides of the concrete hollow block.

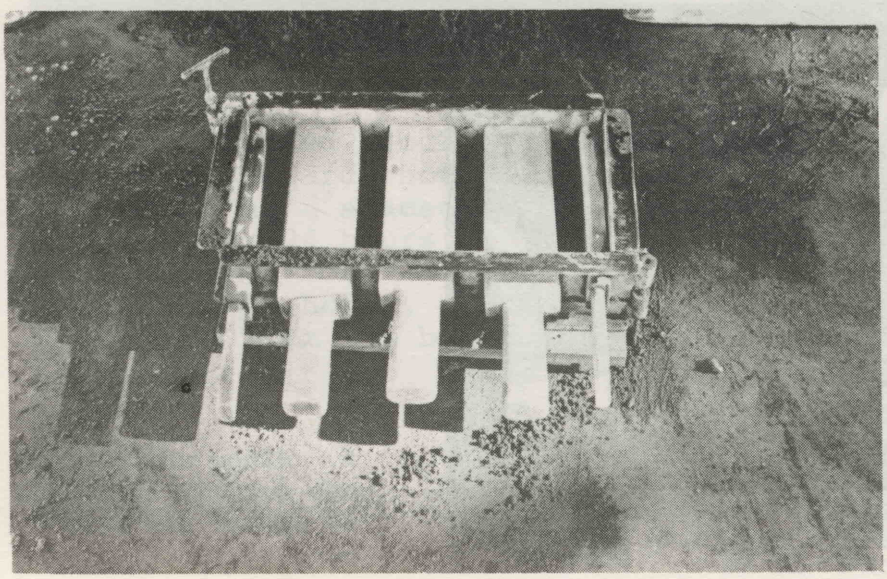
11. Unlock the hinge at one corner. Open it gently and slide the mould off.

MAKING THE CONCRETE HOLLOW BLOCKS

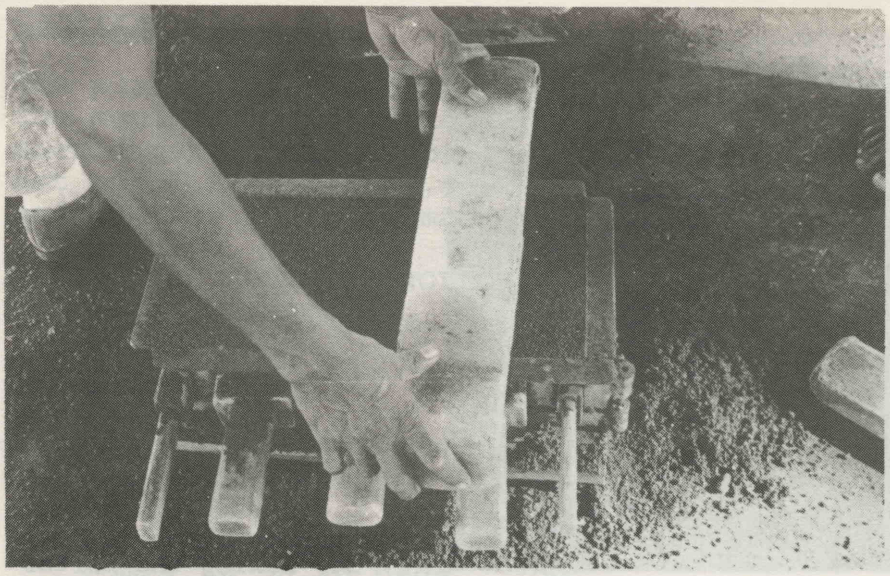
1. Mixing the mortar



2. Mould placed on the drying board and filled with mortar to the bottom rim of hole. Tamp down well.



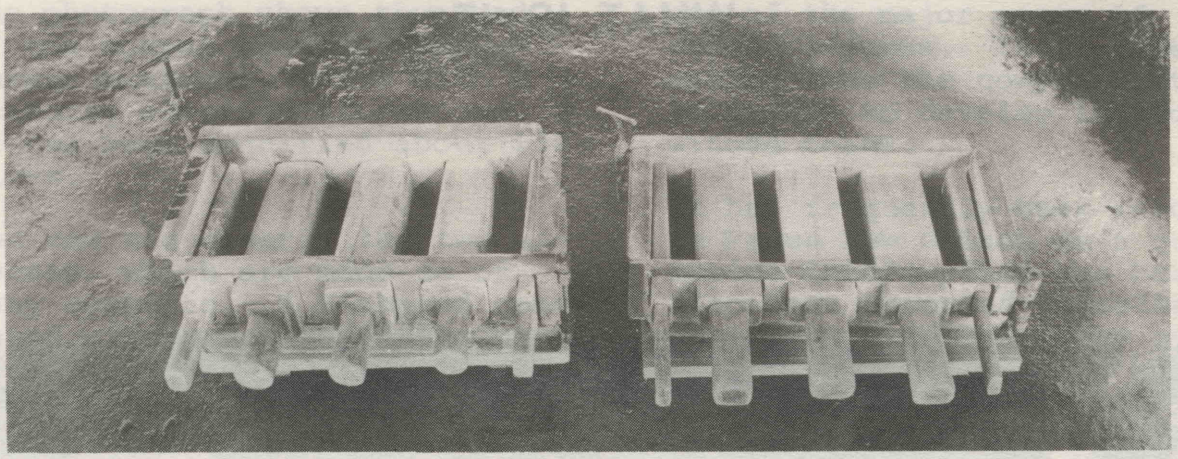
3. Timber cores inserted correctly, ready to be filled with mortar and tamped down.



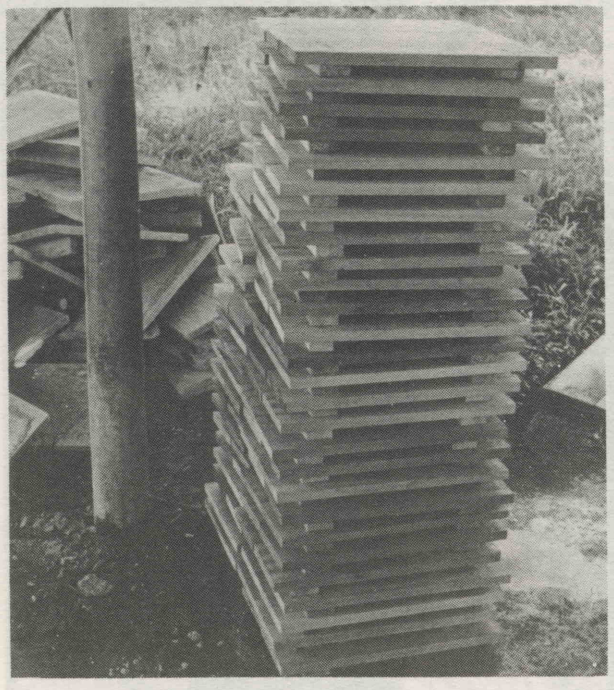
4. Mould filled with mortar, tamped hard and levelled off.

5. Timber cores being pulled out straight. The left hand is used to steady the mould.

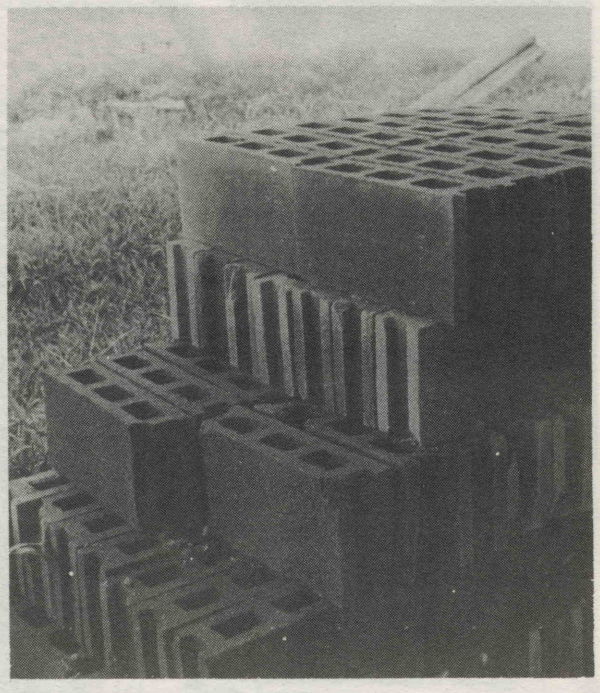
6. Hinge unlocked at one corner; the mould is opened and slid out.



The moulds



Drying boards



Finished concrete hollow blocks

12. The moulded block on the drying board should be moved to a shaded place to dry for 24 hours.

13. After 24 hours, remove the block from its board and stack the blocks. They should be left to cure and harden for 7 days. During this time, the concrete hollow blocks should be kept wet. After this, they are ready for use.